

What is claimed is:

1. A cysteine protease inhibitor comprising casein or a partial peptide thereof as an active ingredient.

2. The cysteine protease inhibitor according to claim 1, wherein the casein or the partial peptide thereof is derived from human or bovine.

3. A cysteine protease inhibitor comprising casein as shown in the following (A) or (B) or a partial peptide thereof as an active ingredient;

(A) a peptide having amino acid sequence of at least amino acid numbers 133 to 151 of the amino acid sequence shown in SEQ ID No. 1 of the Sequence Listing, or

(B) a peptide having amino acid sequence of at least amino acid numbers 133 to 151 of the amino acid sequence shown in the SEQ ID No. 1 of the Sequence Listing, including substitution, deletion, insertion, addition or inversion of one or plural amino acids, and having cysteine protease inhibitory activity.

4. A cysteine protease inhibitor containing casein as shown in the following (C) or (D) or a partial peptide thereof as an active ingredient;

(C) a peptide having amino acid sequence of at least amino acid numbers 142 to 160 of the amino acid sequence shown in SEQ ID No. 2 of the Sequence Listing, or

(D) a peptide having amino acid sequence of at least amino acid

numbers 142 to 160 of the amino acid sequence shown in the SEQ ID No. 2 of the Sequence Listing, including substitution, deletion, insertion, addition or inversion of one or plural amino acids, and having cysteine protease inhibitory activity.

5. A cysteine protease inhibitor, comprising casein hydrolysate which is obtainable by hydrolyzing casein with protease and has cysteine protease inhibitory action, as an active ingredient.

6. The cysteine protease inhibitor according to claim 5, wherein the protease is one or a plurality of proteases selected from the group consisting of proteases derived from animals and proteases derived from microorganisms.

7. The cysteine protease inhibitor according to claim 5 or 6, wherein degree of hydrolysis of the casein hydrolysate is 6 to 45%.

8. The cysteine protease inhibitor according to any one of claims 5 to 7, wherein number-average molecular weight of the casein hydrolysate is 200 to 5,000 dalton.

9. The cysteine protease inhibitor according to any one of claims 5 to 8, which comprises casein hydrolysate not less than 0.005% by mass with respect to the total amount.

10. The cysteine protease inhibitor according to any one of claims 1 to 9, wherein the cysteine protease inhibitor is a preventive or therapeutic agent for a disease associated with cysteine protease.

11. The cysteine protease inhibitor according to claim 10, wherein the disease associated with the cysteine protease is

osteoporosis, malignant hypercalcemia, breast cancer, prostate cancer, periodontitis or bacterial and viral infectious diseases.

12. A food and drink composition or feed composition, which is produced by adding the cysteine protease inhibitor according to any one of claims 1 to 11.

13. A method for treating a disease associated with cysteine protease, wherein the cysteine protease inhibitor according to any one of claims 1 to 11 is administered to a subject.

14. A use of casein or a partial peptide thereof in manufacture of a cysteine protease inhibitor.

15. The use according to claim 14, wherein the casein or the partial peptide thereof is derived from human or bovine.

16. A use of casein as shown in the following (A) or (B) or a partial peptide thereof in manufacture of a cysteine protease inhibitor;

(A) a peptide having amino acid sequence of at least amino acid numbers 133 to 151 of the amino acid sequence shown in SEQ ID No. 1 of the Sequence Listing, or

(B) a peptide having amino acid sequence of at least amino acid numbers 133 to 151 of the amino acid sequence shown in SEQ ID No. 1 of the Sequence Listing, including substitution, deletion, insertion, addition or inversion of one or plural amino acids, and having cysteine protease inhibitory activity.

17. A use of casein as shown in the following (C) or (D) or a partial peptide thereof in manufacture of a cysteine protease

inhibitor;

(C) a peptide having amino acid sequence of at least amino acid numbers 142 to 160 of the amino acid sequence shown in SEQ ID No. 2 of the Sequence Listing, or

(D) a peptide having amino acid sequence of at least amino acid numbers 142 to 160 of the amino acid sequence shown in SEQ ID No. 2 of the Sequence Listing, including substitution, deletion, insertion, addition or inversion of one or plural amino acids, and having cysteine protease inhibitory activity.

18. A use of a casein hydrolysate which is obtainable by hydrolyzing casein with a protease and has cysteine protease inhibitory action, in manufacture of a cysteine protease inhibitor.

19. The use according to claim 18, wherein the protease is one or a plurality of proteases selected from the group consisting of proteases derived from animals and proteases derived from microorganisms.

20. The use according to claim 18 or 19, wherein degree of hydrolysis of the casein hydrolysate is 6 to 45%.

21. The use according to any one of claims 18 to 20, wherein number-average molecular weight of the casein hydrolysate is 200 to 5,000 dalton.

22. The use according to any one of claims 18 to 21, which comprises casein hydrolysate not less than 0.005% by mass with respect to the total amount.

23. The use according to any one of claims 14 to 22, wherein

the cysteine protease inhibitor is a preventive or therapeutic agent for a disease associated with cysteine protease.

24. The use according to claim 23, wherein the disease associated with cysteine protease is osteoporosis, malignant hypercalcemia, breast cancer, prostate cancer, periodontitis or bacterial and viral infectious diseases.